REMARKS/ARGUMENTS

Claims 1-38 are pending. Claim 20 has been amended. Reconsideration is respectfully requested.

1. Claim Objection

Claim 20 (an apparatus claim) was objected to because it erroneously recited "the method". The Examiner suggested that "the method" should be replaced by "an apparatus". The Applicant respectfully submits that claim 20 should be amended to simply delete the erroneous language, and claim 20 has been so amended. Approval of amended claim 20 is respectfully requested.

2. Rejection Under 35 U.S.C. 101

Claims 1-38 stand rejected under 35 U.S.C. 101 because the claimed invention allegedly is not supported by either an asserted utility or a well established utility, and thus appear to be non-statutory. The Applicant respectfully traverses this rejection.

On page 2 of the present Office Action, the Examiner concludes that no physical transformation is present to establish a practical application of the idea, and that result is useful only if at least made available for use in the disclosed practical application. Yet, there is no identified authority that a claim producing a result (e.g. a location determination of a boundary, which is useful for a disclosed practical application of methods and systems for analyzing particles in dilute fluid samples) is unpatentable without steps or other limitations being added to the claim specifically applying that result. In fact, the authority is to the contrary. In *State Street Bank & Trust Col. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed. Cir. 1998), the Court held:

> "Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result" -- a final share price

momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades."

As this case makes clear, a claim need not include the uses to which the claimed result is ultimately put, but rather just the result itself so long as it is useful, concrete and tangible. Locating the boundary of an object clearly constitutes a practical application of image formation and processing because it produces a useful, concrete and tangible result – a boundary location – which is useful for methods and systems for analyzing particles.

Therefore, it is respectfully submitted that the claims do recite statutory subject matter, and that this rejection should be withdrawn.

3. Rejection Under 35 U.S.C. 112

Claims 1 and 20 stand rejected under 35 U.S.C. 112, first paragraph, because the claimed invention is allegedly not supported by either an asserted utility or a well established utility (for the reasons underlying the rejection of the claims under §101 discussed above). The Applicant traverses this rejection.

As stated above in Part 2, the Applicant respectfully submits that the rejection of the claims under §101 is erroneous because locating the boundary of a particle is a useful, concrete and tangible result, which is useful in methods and systems for analyzing particles. For the reasons set forth above, it is respectfully submitted that this rejection is erroneous and should be withdrawn.

4. Rejection of Claims 1-12, 14-31 and 33-38 Under §102(b)

Claims 1-12, 14-31 and 33-38 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,539,841 (Huttenlocher). The Applicant respectfully traverses this rejection.

Independent claims 1 and 20 recite a system and method for locating a boundary of an object by:

1) forming an image of the object,

2) identify groups of the image pixels that represent edge segments of the object,

3) form patches around the image pixel groups that are each dimensioned and positioned to entirely contain one of the image pixel groups,

4) performing a patch merge process that merges any two of the patches together that meet a predetermined proximity threshold relative to each other to form a merged patch that is dimensioned and positioned to entirely contain the two merged patches, and

5) continuing the merge process for any of the patches and the merged patches meeting the predetermined proximity threshold until none of the patches and the merged patches meet the predetermined proximity threshold.

This technique more reliably groups together edge segments representing the boundary of a single particle, without unnecessarily including edge segments that are either non-particles or should be associated with another particle, thus allowing any gaps between edge segments from a single particle to be filled in to form a single and continuous particle edge (see specification page 8, lines 20-25).

In contrast, Huttenlocher discloses a method of comparing and looking for similarities among tokens, which are defined as characters, symbols, and alphanumeric or punctuation elements. (See Abstract, and column 8, lines 10-12.) The process includes determining boundaries of the tokens, and then comparing word token shapes with known or previously identified word token shapes. (See Col. 7, line 62 to Col. 8, line 38). It is submitted that the boundary determination of the tokens does not involve, teach or suggest the boundary locating method or system of claims 1 and 20.

More specifically, claims 1 and 20 recite identifying groups of image pixels ***that represent edge segments of the object***, and forming patches around the pixel groups. In contrast, Huttenlocher discloses connecting components in an image by grouping together all black pixels having a particular neighbor relationship (namely, finding a black pixel, finding all neighboring black pixels, and finding their neighboring black pixels, and so on), and then placing a box around the entire group. (See Col. 9, lines 35-55) Thus, Huttenlocher does not group pixels ***that***

represent edge segments, but rather includes in each group any pixels meeting the neighbor relationship criteria (i.e. there is no discrimination between edge pixels and interior pixels, as all pixels neighboring each other are grouped and boxed, whether they form the edge or the interior, or a combination of the both, for the object at issue). Thus, group identification and patch formation as recited in claims 1 and 20 is not taught or suggested by Huttenlocher.

Claims 1 and 20 further recite performing a patch merge process that merges any two of the patches together that meet a predetermined proximity threshold relative to each other to form a merged patch, and continuing the merge process for any of the patches and the merged patches meeting the predetermined proximity threshold until none of the patches and the merged patches meet the predetermined proximity threshold. In contrast, Huttenlocher teaches a single merge step in which boxes around the tokens have a certain overlap are merged together. (See Col. 10, lines 45-63.) This single merge step fails to teach, suggest, or even contemplate continuing the merge process based on overlap of patches ***and merged patches*** until none of the patches and merged patches meet the overlap requirement. Instead, after the initial single merge step, Huttenlocher teaches a histogramming analysis with respect to separation distances between patches (to distinguish between separation between characters and separation between words), in order to merge characters that are deemed to be included in the same word. (See Col. 10, line 64 to Col. 11, line 27.) This further merge process simply does not teach or suggest the iterative continuation of patch merge of both patches and merged patches until neither meet the proximity threshold as recited by the claims.

For these reasons, the Applicant respectfully submits that claims 1 and 20 are not anticipated by Huttenlocher, and that this rejection should be withdrawn.

With respect to claims 2-12, 14-19, 21-31 and 33-38, these claims depend upon claim 1 or 20, and are deemed allowable for the reasons set forth above. In addition, it is submitted that Huttenlocher fails to teach the limitations of these dependent claims as well, and that the text portions of Huttenlocher cited by the Examiner in fact do not support a contrary conclusion. For example:

- Claims 2 and 21 recite associating all the edge segments contained within one of the merged patches ***as representing the boundary of the object***. In contrast, Col. 4, lines 49-55 clearly teach identifying any pixels that meet the particular neighbor relationship, with no consideration of whether the pixels represent a boundary or an interior of the object.
- Claims 3 and 22 recite the predetermined proximity threshold is a predetermined number of the image pixels shared by any of the patches ***and merged patches*** that overlap each other. In contrast, Col. 10, lines 50-54 does not consider overlap with merged patches, but rather with just the original patches only. With respect to merged patches, it is separation that is considered, not overlap. (See Col. 10, line 64 to Col. 11, line 27.)
- Claims 4 and 23 recite the predetermined proximity threshold is a predetermined distance between any of ***the patches*** and merged patches. In contrast, Huttenlocher only considers predetermined distances with respect to the merged patches, not the original patches. (See Col. 10, line 64 to Col. 11, line 27.)
- Claims 6 and 25 recite that the predetermined distance is measured from center portions of the patches and merged patches. In contrast, the distance contemplated by Huttenlocher is "separation distance" with respect to differentiating between inter-character separation and word separation (see Col. 11, lines 8-13), which does not suggest or even contemplate a measurement from center portions of letters or words.
- Claims 7 and 26 recite that the predetermined proximity threshold is calculated from the sizes and separation distances of the patches and merged patches. Huttenlocher does not appear to contemplate the size of the patches in its determination of merging overlapping patches or separated merged patches.
- Claims 8 and 27 recite that the patch formation includes dimensioning each of the patches as small as possible while still entirely containing one of the image pixel groups. In contrast, Col. 13, lines 35-36 cited by the Examiner relates to comparing the boxes to determine if they are reasonably close in size to each other.

- Claims 9 and 28 recite (after dimensioning of the patches as small as possible), expanding each of the patches by moving wall portions of the patch away from a center of the patch by a predetermined distance. Huttenlocher does not contemplate such an expansion of the patches.
- Claims 11-12, 14-16, 30-31, and 33-35 relate to forming a background level image in helping to identify the groups of image pixels that represent edge segments of the object. Huttenlocher fails to contemplate the use such background level images.
- Claims 17-18 relate to creating binary images and re-assigning binary pixels, which Huttenlocher fails to teach or suggest.
- Claims 19 and 38 relate to using histograms to adjust image pixel values. There is no such apparent adjustment of pixel values in Huttenlocher.

For these reasons, it is respectfully submitted that claims 1-12, 14-31 and 33-38 are not anticipated by Huttenlocher, and that this rejection should be withdrawn.

5. Rejection of Claims 13 and 32 Under §103(a)

Claims 13 and 32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Huttenlocher in view of U.S. Patent 5,642,433 (Lee). Applicant respectfully traverses this rejection.

Claims 13 and 32 depend upon claim 1 or 20, and thus are considered allowable for the reasons set forth above in Part 4. The additional of Lee fails to cure the deficiencies of Huttenlocher noted above.

Additionally, claims 13 and 32 recite that the formation of the N background electronic images of the field of view includes flowing transparent fluid through the field of view, which the Examiner admits Huttenlocher fails to teach. However, the Examiner states it would have been obvious to have modified Huttenlocher's detection technique with a transparent fluid through the field of view to form electronic images as taught by Lee, the motivation being Lee's transparent fluid image. The Applicant respectfully traverses this conclusion. Huttenlocher

teaches a technique of improved analysis of printed characters and words. It is inconceivable how a transparent fluid image device could be combined into such a system and still work, let alone that one skilled in the art would somehow be motivated to make such a combination. The Examiner is respectfully reminded that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984). MPEP §2143.01

For the foregoing reasons, it is respectfully submitted that the claims are in an allowable form, and action to that end is respectfully requested.

Respectfully submitted,

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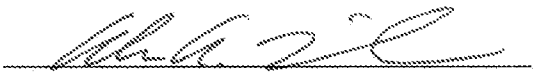
Dated: August 23, 2007 By: 

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